

A COMPARISON OF THE ECONOMIC COSTS OF EQUINE LAMENESS, COLIC, AND EQUINE PROTOZOAL MYELOENCEPHALITIS (EPM)

Seitzinger AH¹, Traub-Dargatz JL², Kane AJ², Kopral CA¹, Morley PS², Garber LP¹, Losinger WC¹, & Hill GW¹

¹ Centers for Epidemiology and Animal Health, USDA:APHIS:Veterinary Services, 555 S.Howes Street, Fort Collins, CO 80521.

² College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, CO 80523.

Introduction

National estimates of the economic cost of animal diseases can be helpful in prioritizing research, management, and control efforts. There are few recent estimates of the economic impact of equine health conditions in the United States, particularly at the national level. Lloyd and Kaneene³ report median monetary expenditures plus death losses and median performance days lost for Michigan from data obtained in the Michigan Equine Monitoring System for 1992 to 1994, but other cost estimates focus primarily on aiding decision-making among alternative treatment strategies.

Materials and Methods

Epidemiological estimates from the NAHMS Equine'98 study^{4,5} were combined with population and value estimates from USDA's National Agricultural Statistics Service (NASS)⁶ and the American Horse Council (AHC)^{7,8} to estimate the economic cost of lameness, colic, and equine protozoal myeloencephalitis (EPM) in 1998 to the US equine population. Questions in the NAHMS survey were structured such that three components of costs associated with the diseases could be estimated. These three components were death loss, veterinary services, drug, and additional care costs, and lost use of the affected horses.

_Analysis of data from the NAHMS Equine '98 survey has lead to estimates of the percent of the US horse population which is affected annually with lameness, colic, and EPM. In the case of lameness and EPM, these estimates as well as the cost data described below were obtained by asking questions related to the last cases of lameness and EPM which occurred on the operation being surveyed. Asking participants for detailed information on the last case which had occurred on the operation was expected to yield higher quality data than expecting recall of multiple events. For colic, the estimates are based on data recorded on every colic case observed on the operation over the course of a one year period at the time the colic occurred.

_The value of death loss was calculated as the affected population of horses greater than six months of age times the weighted average number of events which ended in death times the average sales value of a horse in the US during 1998 (Figure 1).

_Expenses for veterinary services, drugs, and additional care equal the affected population of horses greater than six months of age multiplied by weighted average costs of veterinary services, drugs and additional care reported in the Equine '98 survey.

_Beyond these direct costs of diseases, there are costs associated with not being able to use the horse during treatment and recuperation. It is important to estimate these costs in terms of the revenue foregone by the owner during these periods of lost use. In Equine '98 operators estimated the number of days of lost use of horses surviving a condition or disease event. In placing a value on these days of lost use, a proxy for the revenue foregone by the horse owner was calculated. The total number of days of lost use in the US was multiplied by two components reflecting revenue foregone. These two components are the average sales value of a horse divided by the number of days of life expectancy discounted to the present plus the weighted average cost of maintaining the horse. The life expectancy of a horse was assumed to be 20 years.

_The three cost components were summed to obtain an estimate of the total economic cost to the US of lameness, colic, and EPM in the US horse population.

_Results

_The estimated costs for death loss, lost use, and veterinary services, drug, and additional care expenses for the US equine population greater than six months of age when affected by lameness, colic, and EPM are as follows.

For lameness, the total estimate ranges from \$678 million to \$1 billion for 1998. The largest component of these costs, 66 percent, is attributed to lost use of the horses. A further 29 percent of the costs of lameness arise from veterinary services, drug, and additional care costs, while only 5 percent of the losses result from deaths due to lameness.

_In the case of colic, death losses play the dominant role accounting for 66 percent of the total cost of \$115 million in 1998. Veterinary services, drug, and additional care costs sum to \$35 million, or 30 percent of total costs. Lost use plays the smallest role among colic events with a value of \$4 million, or only 3 percent of the total costs.

_EPM is the least expensive of the three diseases nationally on an annual basis and is estimated to cost \$27 million in 1998. As was true for lameness, lost use plays the most significant role in costs at \$16 million, or 59 percent of the total. Veterinary services, drug, and additional care costs total \$11 million, or 41 percent of total costs, while death loss is only \$1 million, or 4 percent.

_Discussion

_The three diseases chosen for study in the NAHMS Equine '98 survey were based on input from industry, practitioners, government, and academia. These are of interest

from an economics perspective because they provide estimates of the total costs common health concerns in the US and because they provide an interesting comparison of the relative importance of the different components of the costs.

A much higher incidence of equine lameness combined with average levels of death, number of days lost use, and veterinary services, drug, and additional care expenses ranked lameness as the most costly of the three conditions/diseases. Large death losses, average incidence, low number of days lost use, and low veterinary services, drug, and additional care expenses lead to colic falling into a distant second position among the three conditions/diseases costs. And EPM ranks third because a very low incidence of the disease offsets average levels of death loss, high levels of days lost use, and high levels of veterinary services, drug, and additional care expenses.

—
_These results are not quantitatively comparable to the results presented from the Michigan study by Lloyd and Kaneene, but the relative ranking of the conditions/diseases in the two studies can be compared. The results presented here agree with the ranking discovered by Lloyd and Kaneene in terms of monetary care expenses, the value of death losses, and the median performance-days lost for lameness, colic, and neurologic disease.

— _References

- _3 Lloyd, JW, Kaneene JB. Economics of health management in the Michigan, USA equine industry. Prev Vet Med 1997;30:1-8.
- _4 USDA. Lameness and Laminitis in US Horses. USDA:APHIS:VS, CEAH. National Animal Health Monitoring System. Fort Collins, CO, 2000. #N318.0100.
- _5 USDA. Equine Protozoal Myeloencephalitis in the US. USDA:APHIS:VS, CEAH. National Animal Health Monitoring System. Fort Collins, CO, April 2000. #N312.0400.
- _6 USDA. Equine. USDA:National Agricultural Statistics Service. Washington D.C., March 2, 1999.
- 7 American Horse Council. The Economic Impact of the Horse Industry in the United States. Volume 1: National Summary, Policy Economics Practice, Barents Group LLC, December 9, 1996.
- _8 American Horse Council. The Economic Impact of the Horse Industry in the United States. Volume 4: National and State Breed Breakouts, Policy Economics Practice, Barents Group LLC, February 14, 1997.

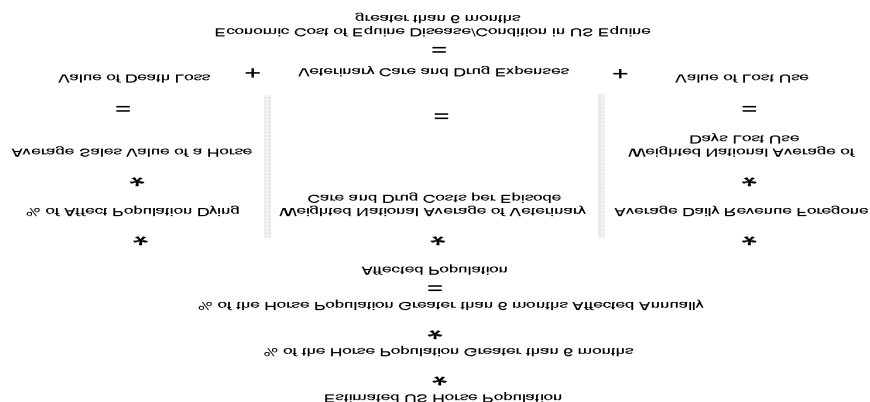


Figure 1. Components of Cost Estimate